

**In the Drawings:**

Please replace the drawings on file with the attached SIXTEEN sheets of drawings.

### **REMARKS**

In response to the Official Action of October 15, 2008, claim 1 has been amended, and new drawings have been submitted.

#### **Drawings**

At section 1, the drawings are objected to. Applicant submits herein replacement formal drawings. The Office indicates that the “drawings contain blank boxes and other shapes, which are not widely, recognized engineering symbols.” Applicant respectfully submits that none of the drawings contain shapes or symbols that are not known in the art. The drawings contain normal logic symbols, such as NAND gates, inverters and the like. Other boxes, such as box 30 in Figure 2 represent a well-known mathematical function. For box 30, this function is the absolute value of the quantity, squared. Accordingly, applicant respectfully requests that the objection to the drawings be withdrawn.

#### **Claim Objections**

At section 2, claims 1-13 and 16-26 are objected to because in claim 1, line 15 “plateau.” should be “plateau,”. Applicant has amended claim 1 to correct this typographical error. Accordingly, applicant respectfully requests that the objection to the claims be withdrawn.

#### **Claim Rejections - 35 USC §103**

At sections 3-5, claims 1, 10-12, 14, 16 and 27 are rejected under 35 USC §103(a) as being unpatentable over Isaksson et al. (US Patent 6,865,232, hereinafter Isaksson). Applicant respectfully disagrees with the rejection for the following reasoning.

Independent claim 1 recites:

A method for the detection of the reception of a data frame in an input signal ( $y_{OFF}(n)$ ), said data frame comprising periodically repeated symbols at the beginning, comprising the steps of

- a) sampling said input signal ( $y_{\text{OFF}}(n)$ ) with a predetermined sampling rate,
- b) generating a first signal ( $|J(k)|^2$ ) that is dependent on an autocorrelation of said input signal with a delayed copy of said input signal,
- c) detecting a plateau in said first signal ( $|J(k)|^2$ ), and
- d) generating an output signal that is indicative of detecting said plateau, wherein said step of detecting a plateau comprises the steps of
  - c1) generating a differentiator signal ( $J_{\text{diff}}(k)$ ), which is dependent on the difference of a first sample of said first signal and a second sample of said first signal that was taken a first predetermined number of sampling periods earlier, and
  - c2) detecting an absolute maximum of said differentiator signal ( $J_{\text{diff}}(k)$ ) within a second predetermined number of sampling periods.

The Office fails to substantiate the assessment on page 4 of the Official Action that Isaksson discloses “said data frame comprising periodically repeated symbols at the beginning.” In fact, Isaksson does not disclose this claim element. “Periodically repeated symbols” are symbols, which are repeated with a constant time span between subsequent repetitions of the respective symbols. Support for the above claim feature is found on page 5, lines 8 to 22 of the specification as originally filed.

With regard to the frame structure, and in particular to the beginning of a frame, Isaksson, in Fig. 7, discloses the use of a “cyclic prefix” in a frame. However, a cyclic prefix only implies, according to the definition given in col. 12, lines 2 to 4, a copy of the first 128 samples of a frame at the end of the frame. This does not disclose the use of “periodically repeated symbols at the beginning” of a frame, as claimed.

Isaksson further discloses the transmission of a “system heartbeat” (claim 1, second paragraph) from a transmitter to a receiver. However, while a heartbeat might be considered a periodical signal, this is not sufficient disclosure of a “periodically repeated symbol at the beginning” of a frame, as claimed.

Isaksson also mentions the use of a pilot channel or pilot carrier. However, the pilot channel is used for transmitting a pseudo-random sequence for synchronization between the transmitting and the receiving side, (Isaksson, col. 14, lines 52 to 54). There is no disclosure of a connection of the pilot channel to a frame structure. Furthermore, the term “pilot symbol” cannot be found in the Isaksson reference.

Therefore, Isaksson fails to disclose or suggest “periodically repeated pilot symbols at the beginning” of a frame, as claimed. Furthermore, the pilot carrier of this reference cannot be considered relevant to the claim element of the claimed method for detection of the reception of a data frame.

The presence of periodically repeated symbols at the beginning of a data frame is exploited by the frame detection method of claim 1. Accordingly, in the absence of periodically repeated symbols at the beginning of a data frame, the Isaksson reference cannot suggest the same invention.

The Office further asserts that the Isaksson reference suggests the claim elements related to a plateau detection. Applicant respectfully disagrees. The Office refers to Isaksson Figs. 12 to 14 and to col. 11, line 29 – col. 18, line 5. At this point, the Office seems to read something into the specification of Isaksson, which in fact is not disclosed.

First, the Office appears to interpret the correlator of Fig. 12 as implementing the claim element of generating the differentiator signal. According to claim 1, the differentiator signal is dependent on the difference of a first sample and a second sample, both samples forming an autocorrelation of an input signal with a delayed copy of the input signal. The second autocorrelation sample is taken a predetermined number of sampling periods earlier than the first sample. In contrast, the correlator of Fig. 12 of the Isaksson reference does not perform this method step. The correlator of Fig. 12 is explained in more detail at col. 17, line 44 of Isaksson. From the description it becomes clear that the correlator of Fig. 12 only performs an autocorrelation, but does not calculate a difference of autocorrelations which were taken at different sampling periods. Accordingly, the signal  $W(k)$  indicated in Fig. 12, and to which the Office refers in its substantiation, is not the differentiator signal of claim 1. Rather,  $W(k)$  is a

difference between two squared ( $Y(k)$ ) and subsequently averaged ( $Z(k)$ ) samples of an input signal  $X(k)$ , which were received at different times. This is simply an intermediate signal in the process of calculating an autocorrelation. However, there is a clear distinction between the difference of squared and averaged input signals of Isaksson on one side and a difference of autocorrelation signals according to claim 1, on the other side.

Secondly, since there is no differentiator signal ascertained in the method of Isaksson, that is, the step c2) of "detecting an absolute maximum of the differentiator signal" is not disclosed or suggested by Isaksson. There is a clear difference between the detection of an absolute maximum of a correlation signal, according to Isaksson, Fig. 14 and col. 17, lines 50 to 52, and detecting an absolute maximum of the differentiator signal, which differentiator signal corresponds to a difference of autocorrelation signals (claim 1). Since these are completely different signals, there is no way the former can suggest the latter.

Accordingly, applicant respectfully submits that claim 1 is patentable over Isaksson in view of the above reasoning. Applicant therefore requests reconsideration and withdrawal of the rejection of claim 1 under 35 USC §103.

Independent claim 14 recites substantially similar features as independent claim 1. Therefore, applicant respectfully submits that claim 14 is also patentable over Isaksson for the same reasons given above with regard to claim 1. Applicant therefore requests reconsideration and withdrawal of the rejection of claim 14 under 35 USC §103.

At section 6, claims 2-8, 13, 17-18, 21-22 and 30 are rejected under 35 USC §103(a) as being unpatentable over Isaksson in view of Huang et al. (US Patent 5,991,289, hereinafter Huang). Huang fails to disclose or suggest the features of the claimed invention that are lacking in Isaksson. Claims 2-8, 13, 17-18, 21-22 and 30 ultimately depend from either independent claim 1 or 14, which are believed to be allowable in view of the above-presented arguments. Therefore, claims 2-8, 13, 17-18, 21-22 and 30 are also believed to be allowable at least in view of such dependency.

Accordingly, applicant requests reconsideration and withdrawal of the rejection of claims 2-8, 13, 17-18, 21-22 and 30 under 35 USC §103.

At section 7, claims 23-26 are rejected under 35 USC §103(a) as being unpatentable over Isaksson and Huang in view of Keller et al. ("Orthogonal Frequency Division Multiplex Synchronization Techniques for Frequency-Selective Fading Channels" IEEE 2001, hereinafter Keller). Keller fails to disclose or suggest the features of the claimed invention that are lacking in Isaksson and Huang. Claims 23-26 ultimately depend from independent claim 14, which is believed to be allowable in view of the above-presented arguments. Therefore, claims 23-26 are also believed to be allowable at least in view of such dependency. Accordingly, applicant requests reconsideration and withdrawal of the rejection of claims 23-26 under 35 USC §103.

At section 8, claims 28-29 are rejected under 35 USC §103(a) as being unpatentable over Isaksson and Huang in view of Keller. Keller fails to disclose or suggest the features of the claimed invention that are lacking in Isaksson and Huang. Claims 28-29 ultimately depend from independent claim 14, which is believed to be allowable in view of the above-presented arguments. Therefore, claims 28-29 are also believed to be allowable at least in view of such dependency. Accordingly, applicant requests reconsideration and withdrawal of the rejection of claims 28-29 under 35 USC §103.

#### **Allowable Subject Matter**

At section 9, claims 9, 15 and 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 9, 15 and 19-20 ultimately depend from independent claims 1 and 14, which are believed to be allowable in view of the above-presented arguments. Therefore, claims 9, 15 and 19-20 are also believed to be allowable in their current dependent form.

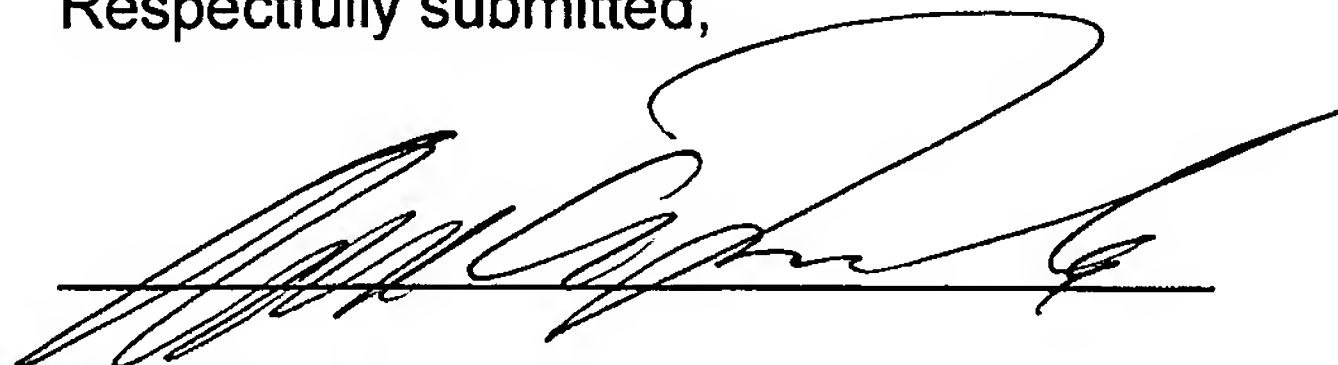
**CONCLUSION**

In view of the foregoing, it is respectfully submitted that the present application as amended is in condition for allowance and such action is earnestly solicited.

Respectfully submitted,

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A handwritten signature in black ink, appearing to read 'Alfred A. Fressola', is written over a horizontal line.

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